MONTHLY WEATHER REVIEW,

OCTOBER, 1881.

(General Weather Service of the United States.)

WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

INTRODUCTION.

In preparing this REVIEW the following data, received up to November 20th, have been used, viz: the regular tri-daily weather charts, containing the data of simultaneous observations taken at 133 Signal Service stations and 15 Canadian stations, as telegraphed to this office; 186 monthly journals and 161 monthly means from the former, and 15 monthly means from the latter; 212 monthly registers from Voluntary Observers; 55 monthly registers from United States Army Post Surgeons; Marine Records; International Simultaneous Observations; monthly reports from the local Weather Services of Iowa, Nebraska and Missouri, and of the Central Pacific Railway Co.; reliable newspaper extracts; special reports.

BAROMETRIC PRESSURE.

The distribution of mean atmospheric pressure over the United States and Canada for the month of October, 1881, is shown by isobaric lines (in black) upon chart No. II. The area of lowest pressure covering as it does the Canadian Maritime Provinces probably results from a translation northeastward of the area of low for September, embracing at that time the Upper Mississippi valley. Over the interior of the country east of the Mississippi the pressure has rapidly increased during the month, and the area of highest (abnormally high) pressure covers the South Atlantic states. Compared with the past month the pressure is everywhere higher except in the Canadian Maritime Provinces, where the most decided fall of the month has occurred. The region of greatest increase embraces that portion of the country from the Arkansas river northward to the British Possessions.

Departures from the Normal Values for the Month.—Compared with the means for previous years, the mean pressure for the present month is everywhere above the normal east of the 90th meridian, the increase varying from 0.04 to 0.12 inch. Throughout the Rocky Mountain slopes, in the Lower Missouri valley, and in the central portion of the Upper Mississippi valley, the pressure is from 0.01 to 0.06 inch below the normal, the barometer having been slow to recover from the marked deficiencies of these regions during September. In the Plateau regions, South Pacific and North Pacific coast regions, other areas of deficiency exist ranging from 0.01 to 0.13 inch, being most marked in the Middle Plateau. Stations reporting a normal condition are Shreveport, Memphis, St. Louis and Keokuk.

Barometric Ranges.—The range of pressure for the month has generally varied from 0.5 to 1.0 inch, and in the extremes from 0.24 inch at San Diego to 1.2 inches at Yankton and 1.26 inches on summit of Mt. Washington. Throughout the several districts the monthly barometric range varied as follows: New England, from 1.13 inches at Albany, Thatcher's Island and Burlington to 1.26 inches on summit of Mt. Washington; Middle Atlantic states, 0.9 at Lynchburg to 1.13 at Sandy Hook; South Atlantic states, 0.49 at Jacksonville to 0.95 at Norfolk; Eastern Gulf states, 0.5 at Pensacola to 0.57 at Atlanta; Florida Peninsula, 0.36 at Key West to 0.46 at Cedar Keys; Western Gulf states, 0.47 at Castroville to 0.77 at Ft. Gibson; Tennessee and the Ohio valley, 0.55 at Nashville to 0.89 at Morgantown; Lower Lake region, 0.8 at Sandusky to 1.05 at Oswego; Upper Lake region, 0.86 at Port Huron to 1.17 at Duluth; Upper Mississippi valley, 0.67 at Cairo to 1.12 at LaCrosse; Missouri valley, 0.87 at Ft. Bennett to 1.20 at Yankton; extreme Northwest, 1.01 at Ft. Buford to 1.19 at Moorehead; Northern Slope, 0.61 at Cheyenne to 0.91 at Ft. Keogh; Middle Slope, 0.66 at Denver to 0.91 at Dodge City; Southern Slope, 0.46 at Stockton to 0.73 at Jacksboro; Rio Grande valley, 0.49 at Eagle Pass and Laredo to 0.98 at Rio Grande; Southern Plateau, 0.31 at Tucson to 0.42 at Yuma;

Middle Plateau, 0.44 at Winnemucca to 0.56 at Salt Lake city; Northern Plateau, 0.51 at Eagle Rock to 0.75 at Umatilla; North Pacific coast, 0.79 at Roseburg to 0.95 at Olympia; Middle Pacific coast, 0.51 at Sacramento to 0.61 at Red Bluff; South Pacific coast, 0.24 at San Diego to 0.48 at Visalia.

Areas of High Barometer.—There has been a general excess of atmospheric pressure east of the Mississippi river and a general deficiency west of the 100th meridian. The greatest excess is noted in Minnesota, the Lake region, and New England. Associated with this distribution of pressure it is deserving of remark that contrary to the usual rule there was a general excess of temperature in the regions which had a pressure above the mean and a deficiency in temperature in the regions where the pressure was below the mean. Only five high areas have merited discription, all of which occurred before the 20th of the month.

No. I.—On the 2d there was a decided rise in pressure in Manitoba and Dakota. On the 3d the barometer continued rising, the highest readings reported were: Ft. Buford, 30.57 or 0.5 inch above the normal, Ft. Stevenson, 30.51 or 0.45 inch above the normal. On the 4th the observed pressures remained highest in Dakota; the northern portion of that territory being in general more than one half inch above the normal. On the 5th the high area was rapidly transferred to the southeastward. At the end of that day the isobar of 30.4 included the country from the Upper Lake region and Upper Mississippi valley, to the Middle Atlantic and Carolina coast. On the 6th the highest area was in the Middle Atlantic states; the highest pressures reported were, Philadelphia, 30.52; Baltimore, Washington, and Lynchburg, 30.54; Norfolk and Charlotte 30.51. On the 7th and 8th the pressure remained highest in the South Atlantic and East Gulf states, while a slight depression was moving across Canada from Manitoba to the Gulf of St. Lawrence. In connection with this high area, frosts were reported on the morning of the 5th, from the Lake region, Middle states and New England, and on the morning of the 6th, from the Lower Lake region and Middle Atlantic states.

No. II.—On the 8th there was a great rise in pressure in Dakota and Manitoba. On the 9th the high area continued nearly stationary in position, and the highest readings reported were as follows: Fort Buford, 30.62; Fort Garry, 30.63; St. Vincent, 30.63. On the 10th the high area moved over the Lake region, and on the 11th was transferred to the Middle Atlantic states, where, at the morning report, the isobar of 30.6 included Albany, Baltimore and Washington. On the 12th and 13th the highest pressure moved into the South Atlantic states during the passage of low area No. I over the Lake region.

No. III.—On the 12th, in rear of low area No. I, the barometer rose very rapidly in the extreme Northwest, the isobar of 30.6 including nearly all of Dakota and Montana. On the 13th the high area extended over the Lake region, accompanied by high winds on the North Atlantic coast. On the 14th the high area was transferred to New England, and on the 15th it disappeared before the advance of low area No. II, then moving over the Lake region.

No. IV.—On the 15th, following the passage of low area No. II, there was a sharp rise of pressure in the Northwest which, on the 16th, extended over the Lake region; on the 17th the highest barometer was transferred beyond the Maritime Provinces and Nova Scotia; the highest barometer reported was at Father Point, 30.57, or 0.6 inch above the normal.

No. V.—The barometer rose quite rapidly in the Northwest on the 17th in rear of low area No. III. On the 18th the rise extended over the Upper Lake region and the Ohio valley. On the 19th the high area was transferred to the New England coast, and then disappeared in advance of low area No. IV.

Areas of Low Barometer.—The tracks of the centres of six areas of low barometer have been charted for this month. One only—No. I—is traced from the Pacific coast. Three—Nos. II, III and VI—developed in the Rocky Mountain region. Two—Nos. I and II—exhibited great energy in the Lake region. One—No. III—developed great energy on the New England coast. The month is remarkable from the fact that no storm centre passed along the Gulf coast or the Atlantic coast south of New York, which probably accounts for the deficiency in rain-fall noted in the Middle Atlantic, South Atlantic and East Gulf states.

No. I—On the 10th a depression, unaccompanied by rain, crossed California in an easterly track and, moving with great rapidity, was, at the 11 p. m. report of the 11th, central in the Upper Mississippi valley. On the 12th the low area crossed the Upper Lake region, and, moving up the St. Lawrence valley, it disappeared on the 13th beyond the limits of the chart. On the 11th, 12th and 13th abundant rains fell in the Northwest, Lake region and St. Lawrence valley. Cautionary signals were ordered on the 10th for Lakes Superior and Michigan; on the 11th for Lakes Huron, Erie and Ontario. These signals were generally justified by the following maximum velocities: Duluth, 26 NW; Escanaba, 26 S.; Milwaukee, 32 S; Grand Haven, 36 S.; Alpena, 25 S.; Port Huron, 30 N.; Detroit, 29 S., Toledo, 28 SE.; Sandusky, 32 S.; Cleveland, 27 S.; Erie, 29 S.; Rochester, 34 SW.; Oswego, 26 NE.

No. II.—On the 12th and 13th the pressure was low in Nevada and Utah preceding the development of a centre of depression. On the 14th the low area moved into the Lower Missouri valley. On the 15th the centre of depression advanced with increasing energy and great rapidity over Lakes Michigan and Huron to the mouth of the St. Lawrence. Cautionary signals were ordered

for this storm at all the lake ports. The following are the maximum wind velocities reported: Marquette, 28 NW; Milwaukee, 34 W.; Grand Haven, 35 S.; Alpena, 28 S.; Port Huron, 30 SW.; Detroit, 27 SW.; Toledo, 28 SW.; Sandusky, 36 SW.; Cleveland, 34 SW.; Buffalo, 26 SW.; Rochester, 28 SW. Cautionary signals were also displayed for this storm on the Atlantic coast from Eastport to New York. The following maximum velocities were reported: Eastport, 25 W.; Boston, 25 W.; Thatcher's Island, 31 S.; Wood's Holl, 38 SW.; Newport, 30 SW.; New Shoreham, 26 SW.

No. III.—The fall in pressure and circulation of the winds in Nebraska and Kansas on the 16th indicated the development of a storm centre in that region. On the 17th the depression moved across the Northwest and the Upper Lake region. On the 18th over the Lower Lakes and New England. Cautionary signals were displayed on the Upper Lakes and Lake Erie on the 17th, but in the Upper Lakes the storm displayed but slight energy. On Lake Erie the following maximum velocities were reported: Detroit, 30 W.; Sandusky, 30 NW.; Cleveland, 27 NW.; Erie, 26 NW. On the Atlantic coast: Thatcher's Island, 42 NW.; Boston, 26 NW.; Wood's Holl, 36 NW.; Newport, 26 NW.; New Shoreham, 36 N.; Sandy Hook, 44 N.; Barnegat, 35 NW.; Cape May, 43 NW.; Breakwater, 44 NW.; Chincoteague, 30 NE.; Cape Henry, 40 NW.; Kittyhawk, 44 NE., Hatteras, 36 NE. It will be noted that the high winds reported on the Atlantic coast occurred after the passage of the storm centre and therefore are to be associated with the rising barometer which succeeded the low area.

No. IV.—On the 19th a depression of slight energy moved in an easterly track as charted over the Upper Lake region into the Province of Ontario. Cautionary signals were ordered for the ports in the Upper Lakes but they were not justified.

No. V.—On the 22d the barometer was low and slowly falling in the Southwest. At the morning report of the 23d a depression had developed, central in Indian Territory. During the day the storm centre moved in a northeasterly track into Indiana. On the 24th it advanced, with diminished energy, over the Lower Lake region, and on the 25th moved across New England. The Cautionary signals ordered for this storm on lakes Erie and Ontario were not justified.

No. VI.—On the 25th and 26th there was a great barometric depression central in Washington Territory, Oregon and Idaho, which extended east of the Rocky Mountains. On the 27th a new centre of depression appeared to be well defined in Colorado and New Mexico. During the day it moved slowly to the northeast exhibiting but slight energy. On the 28th the storm centre advanced into Minnesota and on the 29th it passed over the Lake Superior region beyond the limits of the chart. This storm did not develop any special energy. Cautionary signals were displayed on Lakes Superior, Michigan and Huron and for the western ports of Lake Erie. The following maximum winds were reported: Duluth, 30 W.; Alpena, 28 SE.; Detroit, 27 S.; Sandusky, 27 S.; Cleveland, 29 S. It will be noted that more storm energy was exhibited on Lake Erie than near the track of the centre of low area.

Hurricane at Manzanilla, Mexico.—October 27th, 3 p. m., strong gale from the NE., barometer fell rapidly from 29.1 to 28.0. At about 4.50 p. m. the gale increased to a hurricance, the center of which struck Manzanilla with terrific force and terrible disaster. 28th, 7.50 a. m. there was a lull in the storm of about 10 minutes duration when the wind suddenly changed to the SW. with hurricane force. Every building in the city without an exception was completely destroyed entailing a loss in the aggregate of over $500,000. In the harbor there were present at the time of storm one ship, two barks, two schooners, together with several lighters and small boats. All vessels except one bark were a total loss.

INTERNATIONAL METEOROLOGY.

International charts, Nos. IV and V, accompany the present REVIEW. The former is published for August, 1879, and continues the series of this chart commenced in January, 1877. Chart No. V is prepared for the month of October, 1879, and continues the series of this chart commenced in November, 1877. It will be observed that the numbers of these charts have been changed, being one less in each case. This modification affects only the numerical value and not the character of the charts, having been done because of the discontinuance some time since of the old chart No. IV.

Chart No. IV, shows the mean pressure, temperature and the prevailing direction of the wind at 7.35 a. m., Washington, or 0.43 p. m., Greenwich mean time, for the month of August, 1879, over the Northern and at certain isolated stations in the Southern Hemisphere. Two areas of low pressure, (29.70) are shown upon the chart for the present month, one situated over the Atlantic ocean just south of Iceland, running eastward to include Scotland and westward to the 35th parallel; the other area embraces southwestern Siberia. The isobar of 29.8, commencing near 55° N., 55° W., passes southeastward reaching the 50th parallel near the meridian of 30° W., thence eastward along that parallel to 10° W., where its course changes to NE., reaching the Baltic near Wisby; at this point it turns to the N., curving around the Gulf of Bothnia to the west and passing thence eastward to the White Sea; from this locality the isobar runs southwestward to near the Black Sea, thence eastward to the Caspian, where it curves again to the southwest reaching the Mediterranean north of Beirut. This disposition of pressure places the western half of Russia and the whole of Asia, except scattering coast stations, within the area of 29.8. It will be seen